



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX LABORATORY
1337 S. 46TH STREET BLDG 201
RICHMOND, CA 94804-4698

MEMORANDUM

SUBJECT: Field Audit Report
Groundwater Monitoring Program, George Air Force Base, CA

FROM: Greg Nagle, Environmental Scientist
EPA Region 9 Laboratory (PMD-2)

THROUGH: Brenda Bettencourt, Director
EPA Region 9 Laboratory (PMD-2)

TO: James Chang, Remedial Project Manager
Superfund Division (SFD-8-1)

Attached is a split sample report for sampling performed the week of April 10th, 2006. This report details observation made during the groundwater sample collection process.

If there are further questions concerning this field-sampling audit, please call Greg Nagle at (510) 412-2334.

ATTACHMENT: Field Audit Report

**George Air Force Base
Basewide Groundwater Monitoring Program
April 2006
Field Audit Report**

Introduction:

On April 10th, 11th, and 12th of 2006, Greg Nagle of the USEPA Region 9 Laboratory Field and Biology (FAB) team performed a field audit of groundwater sampling procedures in support of the George Air Force Base Groundwater Monitoring Program. Mr. Nagle also obtained split samples during the course of the field audit. The EPA FAB team conducted the field audit and split sampling in accordance with the following documents:

Basewide Sampling and Analysis Plan (SAP), George Air Force Base, California HydroGeoLogic 1998.

Final 2003 Annual Sampling and Analysis Plan (SAP) Addendum Basewide Groundwater Monitoring Events, Operable Units 1, 2, and 3 George Air Force Base, California MWH Americas, Inc. July 2003.

Final Split Sampling Plan (SSP) Basewide Groundwater Monitoring Program, George Air Force Base, Victorville, California. (EPA Region 9 Field and Biology Team, April, 2006.)

The FAB team identifies deviations from the project planning documents referenced above as findings in accordance with the following criteria:

1. Procedure not performed as specified in plan.
2. Procedure performed inconsistent with procedure specified in plan.
3. Appropriate procedure performed, procedure not specified in plan.
4. Inappropriate procedure performed.

Audit Participants:

Project Management

Sam Grizzle – Site Manager, Montgomery Watson Harza (MWH)

Field Support Personnel

Cole Munson – Principal Owner/Lead Sampler, M&M Environmental

Marlin Ellis – Sampler, M&M Environmental

EPA Auditors

Greg Nagle – USEPA Region 9 Laboratory

Joe Eidelberg – USEPA Region 9 Quality Assurance Office (QAO)

The EPA auditors observed sampling procedures and obtained split samples at the following locations as specified in the SSP.

<u>Well ID</u>	<u>Parameters</u>	<u>Description</u>
FT-03	VOCs	OU 1/OU 3/FT-19 Upper Aquifer
MW-49	VOCs	OU 2/OU 3 Upper Aquifer
MW-69	VOCs	OU 2/OU 3 Upper Aquifer
NZ-27	VOCs	OU 1 Upper Aquifer
NZ-89	OCPs	OU 3 Upper Aquifer
NZ-107	VOCs, LF Surrogates	OU 1/OU 3 Lower Aquifer - Landfill
WZ-06	VOCs, Nat Att. Par	OU 3/Site OT-51 Upper Aquifer

Notes:

VOCs – Volatile Organic Compounds

LF – Landfill Surrogates (i.e., Chloride, Nitrate, Sulfate)

Nat Att. Par. – Natural Attenuation Parameters (Total Organic Carbon, Alkalinity, Nitrate, Total Dissolved Solids)

OCPs – Organochlorine Pesticides

Procedures

M&M collected all samples using the same portable submersible pump and control box. M&M calibrated field instruments, calculated purge volumes, followed sample collection/preservation protocols, and performed necessary decontamination procedures in between wells as specified in the planning documents. In so doing, M&M was able to collect sample from 3-4 wells per day.

MWH provided M&M with direction, answered questions, and reviewed paperwork during the course of sampling activities to ensure efficiency and adherence to plan specifications. MWH packed the coolers, filled out air bills, and delivered samples for overnight delivery. The laboratory received all samples within 24 hours of collection, at 4° C without incident.

Photographs, field logs, and chain-of-custody information gathered during the course of audit activities are presented as Exhibit A, B, and C respectively. Identified below are general and specific audit findings with recommendations for corrective action. None of the findings listed impact sample integrity.

General Findings:

1. The projects' contract laboratory, Applied Physics and Chemistry Labs (APCL), Chino California unexpectedly announced it would no longer accept samples for environmental analysis effective April 1st, 2006. MWH is sending samples to EMAX Laboratories, Torrance, California. MWH reportedly audited EMAX within the last year for other projects. EMAX has experience with the US Air Force analytical requirements and data deliverables.
2. One field team (2 employees') of M&M Environmental unexpectedly quit immediately prior to the field audit. At the time of the field audit, M&M Environmental employed one very experienced sampler and one sampler in training.

Specific Findings:

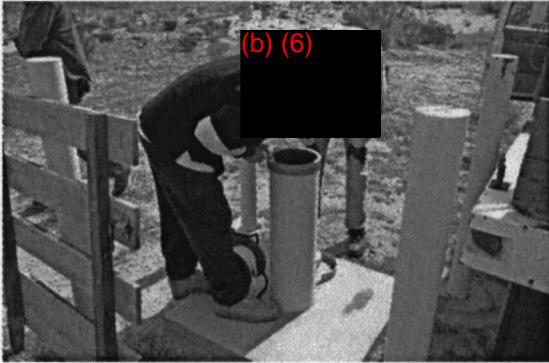
1. Field personnel failed to perform a calibration check for well stabilization parameters (i.e., pH, conductivity, turbidity and dissolved oxygen) at the end of the day on April 10th, 2006 as specified in Section 7.1.1.1 of the Basewide SAP (HydroGeologic, 1998).
2. At MWH's direction, field support personnel did not purge well WZ-06 using the Micro-Purge/Modified Micro-Purge procedure specified in section 6.1.1.1.2 of the Basewide SAP (HydroGeologic, 1998). Instead, MWH directed field personnel to place the pump one foot from the bottom of the well, and pump at a rate of approximately 1.5 gallons per minute (gpm) to purge roughly 75 gallons. When the water level recovered, pumping continued at a rate of approximately 0.25 gpm. Sample collection occurred upon stabilization of field parameters as specified 7.1 of the Basewide SAP Addendum (MWH, 2003). MWH modified this purge technique based on experience and data generated from previous sampling events.
3. The EPA QAO did not provide performance evaluation samples (PES) for all the chemical testing parameters as specified in the SSP. The QAO provides PES through Quality Assurance Testing Support (QATS) Contract Laboratory in Las Vegas, Nevada. EPA and the USAF field personnel submitted PES for volatile organic compounds, nitrate, and alkalinity only. The QATS Laboratory provided a PES for total organic carbon (TOC) as requested, however the container type and chemical preservative was inconsistent with that used by the field and specified in the SSP thus compromising the "double blind" PES submission. QATS provided the PES as directed by EPA.

Recommendations:

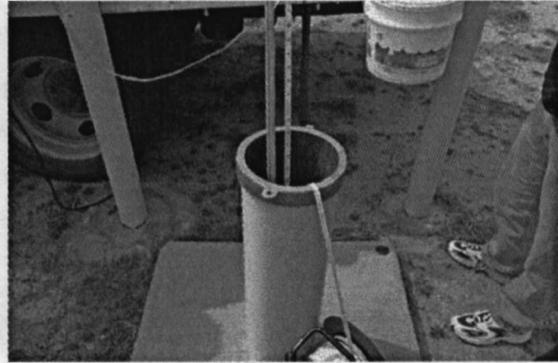
1. MWH should perform an audit of EMAX Laboratories and communicate any project specific requirements as soon as possible. Given the recent closing of APCL, EMAX may be experiencing a significant influx of work from other projects.
2. Given the recent turnover in sampling support at M&M Environmental, and to a lesser degree Specific Finding 1, MWH should continue to provide on-site oversight support.
3. MWH should provide justification for the modified purge approach used at WZ-06 and document the procedure in an addendum to the Basewide SAP.
4. The EPA QAO should provide PES as specified in the SSP, or communicate changes with field personnel in advance of field sampling activities.

Exhibit A

Photographs



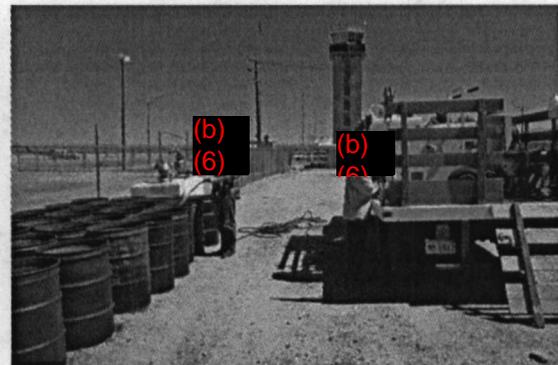
Measuring Water Depth



Setting the Pump



Collecting Sample



Disposing Purge/Decon Water

Exhibit B

Field Logs



MWH

FIELD REPORT

0750 Arrived at
N2-108

0800 Collected Equip
Rinse

0825 Started well
Purge

0855 Parameters Stable
Collect Sample and
start decon

1000 Decon Complete
Report N2-108

1005 Arrived at N2-107

1040 Started well purge at 26 GPM

1115 Collected samples - split samples with EPA

1120 Started decon

1230 Decon Complete - depart N2-107

1405 Collect Sample Start decon

1500 Decon Complete Reported N2-60 to
treatment plant to transfer water

Date:	4/18/86	Job No.:	1951048
Project:	LIG WM		
Location:	GAFB		
Weather:	Clear and Cool		
Present at Site:	MUNSON - ELLIS - GRIZLE GREG NAGLE JOE EIDELBERG		
Calibration Fluid Manufacturer and Lot#:	4974 AUTO CAL SOLUTION EXP 07-05-87		
	Actual	Beginning	Ending
	Value	Calibration	Calibration
Calibration Time:	-	0825	
pH (SU)	4.0	3.98	
EC (ms/cm)	4.49	4.46	
Turbidity (NTU)	0	0	
Dissolved Oxygen (mg/L)	N/A	11.85	

PAGE _____ OF _____

PREPARED BY: _____

1340 Treat Blvd. Ste. 300
Walnut Creek, CA 94597

Phone: 925-975-3400
Fax: 925-975-3412



MONITORING WELL SAMPLING LOG

All measurements taken from: Top of Casing Protective Casing Ground Level Sample ID NZ-60-WG

Well Number NZ-60 Static Water Level (ft) 265.92

Date 4/16/06 Depth to Product (ft) N/A

Time Start 1310 End 1405 Total Well Depth (ft) 295.0'

Client AFCEE Standing Water Column (ft) 29.08

Project George AFB Basewide Groundwater Monitoring Purging Method Modified Micropurge

Sampler(s) MUNSON - ELL. 5 Purging Equipment Grundfos Rediflow

Well Diameter 4" Borehole Diameter 8" Water Level Equipment SOLUST

Screen Interval 274.5 - 294.5 Field Parameter Meter HANNA HI-9142

Pump Depth (ft) 280.46 ORP Meter HANNA

FIELD PARAMETERS MEASURED

TIME	AMOUNT PURGED (gallons)	Purge Rate (gpm)	5%	1%	5%	10% or <10	5%	10%	Water Level (ft)
			EC (mS/cm)	pH	Temp (°C)	Turbidity (NTU)	ORP (mv)	DO (mg/L)	
1310	Started well purge at 29 GPM								
1315	3.79	30	790	7.64	21.6	238	244	6.86	266.12
1320	5.38	26	802	7.64	22.6	149	243	6.58	266.09
1325	6.65	27	802	7.63	23.1	106	240	6.37	266.11
1330	8.00	28	804	7.64	23.3	97	245	6.31	266.11
1335	9.39	28	807	7.64	23.7	81	244	6.30	266.11
1340	10.94	29	811	7.64	24.2	50	240	5.82	266.11
1345	12.29	29	812	7.64	24.0	33	244	5.87	266.11
1350	13.46	22	814	7.64	23.7	18	242	5.84	266.11
1355	14.44	21	815	7.64	23.7	11	244	5.87	266.11
1400	15.22	20	816	7.64	22.5	4	242	5.88	266.11
1405	Collect Sample								

FIELD SCREENING ANALYSIS

Parameter	Method/Instrument	Measurement 1	Measurement 2	Average Measurement	Date/Time	Sampler
H ₂ S						
Fe ²⁺						

OBSERVATIONS OF GROUNDWATER SAMPLES

Color: Clear Other (describe):

Odor: None Low Medium High Fuel-like Other (describe):

Comments:



MWH
MONTGOMERY WATSON HARZA

MONITORING WELL SAMPLING LOG

Page 1 of 1

All measurements taken from: Top of Casing Protective Casing Ground Level Sample ID AZ-107-WG

Well Number AZ-107 Static Water Level (ft) 256.70

Date 4/18/06 Depth to Product (ft) N/A

Time Start: 1640 End: 1115 Total Well Depth (ft) 280.0

Client AFCEE Standing Water Column (ft) 23.30

Project George AFB Basewide Groundwater Monitoring Purging Method Modified Micropurge

Sampler(s) Manson-Ellis Purging Equipment Grundfos Bedflow

Well Diameter 4" Borehole Diameter 8" Water Level Equipment Selast

Screen Interval 260.0' - 280.0' Field Parameter Meter HORIBA U-10

Pump Depth (ft) 268.35 ORP Meter HANNA

FIELD PARAMETERS MEASURED

TIME	AMOUNT PURGED (gallons)	Purge Rate (gpm)	5%	1%	5%	10% or <10	5%	10%	Water Level (ft)
			EC (mS/cm)	pH	Temp (°C)	Turbidity (NTU)	ORP (mv)	DO (mg/L)	
1040	Start well purge at 26 gpm								257.50
1045	3.41	.27	.748	7.78	19.8	6	257	7.20	258.25
1050	4.75	.27	.786	7.70	21.6	6	213	7.18	258.45
1055	5.18	.27	.819	7.71	22.1	6	240	6.53	258.22
1100	6.40	.22	.822	7.72	22.5	7	255	6.71	258.22
1105	7.33	.20	.823	7.73	22.7	7	258	6.74	258.15
1110	8.26	.21	.821	7.73	23.0	7	251	6.79	258.13
1115	Collect Sample								

FIELD SCREENING ANALYSIS

Parameter	Method/Instrument	Measurement 1	Measurement 2	Average Measurement	Date/Time	Sampler
H ₂ S						
Fe ²⁺						

OBSERVATIONS OF GROUNDWATER SAMPLES

Color:	<u>Clear</u>	Other (describe):				
Odor:	<u>None</u>	Low	Medium	High	Fuel-like	Other (describe):

Comments:



FIELD REPORT

0745 arrived at
 0810 Collected Sample
 Blank
 0820 Started well
 Purge @ 25 GPM
 0850 Collected sample
 Start Decon
 1005 Decon Complete
 Report FT-05 for
 N7-89
 1015 arrived at
 N2-89
 1040 Started well purge @ 48 GPM
 1110 Collected Sample - EPA Split
 1215 Decon Complete - Departed N2-89 to treatment
 plant to dump purge water
 1225 arrived at treatment plant - began purge
 water discharge 1245 discharge complete
 Departed treatment plant for MW 69
 1315 arrived at MW 69
 1425 Begin well purge MW 69
 1500 Collect Sample - Start Decon

Date: 4/11/06 Job No.: 1951048

Project: LUGA WWS
 Location: GAFB
 Weather: Cloudy - Cool
 Present at Site: BRANSON ELLIS
 Auto

Calibration Fluid Manufacturer and Lot#: 1974
 AUTOCH Solution EXP 2/6/07

	Actual Value	Beginning Calibration	Ending Calibration
Calibration Time:		0815	1525
pH (SU)	4.0	3.99	3.98
EC (ms/cm)	4.49	4.50	4.48
Turbidity (NTU)	0	0	0
Dissolved Oxygen (mg/L)		12.05	9.83

PAGE _____ OF _____

PREPARED BY: _____

1340 Treat Blvd. Ste. 300
 Walnut Creek, CA 94597

Phone: 925-975-3400
 Fax: 925-975-3412



MONITORING WELL SAMPLING LOG

All measurements taken from: Top of Casing Protective Casing Ground Level Sample ID: FT-03-06

Well Number: FT-03 Static Water Level (ft): 113.60

Date: 4/11/06 Depth to Product (ft): N/A

Time Start: 0820 End: 0850 Total Well Depth (ft): 168.5'

Client: AFCEE Standing Water Column (ft): 54.9'

Project: George AFB Basewide Groundwater Monitoring Purging Method: Modified Micropurge

Sampler(s): Munsie - Ellis Purging Equipment: 2' Grundfos Radflow

Well Diameter: 4" Borehole Diameter: 8" Water Level Equipment: Solinst

Screen Interval: 133.5' - 168.5' Field Parameter Meter: HORIBA U-10

Pump Depth (ft): 141.05 ORP Meter: HANNA

FIELD PARAMETERS MEASURED

TIME	AMOUNT PURGED (gallons)	Purge Rate (gpm)	5%	1%	5%	10% or <10	5%	10%	Water Level (ft)
			EC (mS/cm)	pH	Temp (°C)	Turbidity (NTU)	ORP (mv)	DO (mg/L)	
0820	Started well purge @ 26 GPM								
0825	2.02	25	.581	7.90	18.7	3	240	6.82	113.80
0830	3.51	26	.587	8.19	20.1	4	240	6.35	113.75
0835	4.65	26	.587	8.27	20.5	4	241	6.35	113.75
0840	6.32	26	.587	8.28	20.8	4	241	6.33	113.75
0845	7.86	27	.587	8.28	21.0	5	242	6.35	113.76
0850	Collect Sample								

FIELD SCREENING ANALYSIS

Parameter	Method/Instrument	Measurement 1	Measurement 2	Average Measurement	Date/Time	Sampler
H ₂ S						
Fe ²⁺						

OBSERVATIONS OF GROUNDWATER SAMPLES

Color: Clear Other (describe):

Odor: None Low Medium High Fuel-like Other (describe):

Comments:



MONITORING WELL SAMPLING LOG

All measurements taken from: Top of Casing Protective Casing Ground Level Sample ID NZ-89-WG
 Well Number: NZ-89 Static Water Level (ft) 121.72
 Date: 04-11-06 Depth to Product (ft) N/A
 Time Start: 1040 End: 110 Total Well Depth (ft) 128.5
 Client: AFCEE Standing Water Column (ft) 6.78'
 Project: George AFB Basewide Groundwater Monitoring Purging Method: Modified Micropurge
 Sampler(s): Manson-Ellis Purging Equipment: Grundfos Reciflow
 Well Diameter: 4" Borehole Diameter: 8" Water Level Equipment: SOINIST
 Screen Interval: 108'-128.5 Field Parameter Meter: HORIBA U-10
 Pump Depth (ft): 125.11 ORP Meter: HANNA

TIME	AMOUNT PURGED (gallons)	Purge Rate (gpm)	FIELD PARAMETERS MEASURED						Water Level (ft)
			5% EC (mS/cm)	1% pH	5% Temp (°C)	10% or <10 Turbidity (NTU)	5% ORP (mv)	10% DO (mg/L)	
1040	Start well purge at .48 GPM							121.72	
1045	4.43	.40	7.91	7.92	18.6	11	266	6.39	121.75
1050	6.72	.27	7.92	7.92	20.5	9	232	6.03	121.73
1055	8.84	.27	7.93	7.93	21.3	10	237	5.88	121.75
1100	10.80	.40	7.94	7.94	21.3	10	237	5.83	121.75
1105	12.13	.36	7.94	7.94	21.3	8	239	5.85	121.75
1110	Collect Sample								

FIELD SCREENING ANALYSIS						
Parameter	Method/Instrument	Measurement 1	Measurement 2	Average Measurement	Date/Time	Sampler
H ₂ S						
Fe ²⁺						

OBSERVATIONS OF GROUNDWATER SAMPLES

Color: Clear Other (describe):
 Odor: None Low Medium High Fuel-like Other (describe):
 Comments:



MONITORING WELL SAMPLING LOG

All measurements taken from: Top of Casing Protective Casing Ground Level Sample ID: MW-69-W6

Well Number: MW-69 Static Water Level (ft): 125.70

Date: 7/11/06 Depth to Product (ft): N

Time Start: 1425 End: 1500 Total Well Depth (ft): 140

Client: AFCEE Standing Water Column (ft): 14.3

Project: George AFB Basewide Groundwater Monitoring Purging Method: Modified Micropurge

Sampler(s): MUNSON-ELLIS Purging Equipment: 2 Grundfos Redflow

Well Diameter: 4" Borehole Diameter: 12" Water Level Equipment: SOLINST

Screen Interval: 120'-140' Field Parameter Meter: HERIBA 61-10

Pump Depth (ft): 135.0 130.7 ORP Meter: HANNA

FIELD PARAMETERS MEASURED

TIME	AMOUNT PURGED (gallons)	Purge Rate (gpm)	5%	1%	5%	10% or <10	5%	10%	Water Level (ft)
			EC (mS/cm)	PH	Temp (°C)	Turbidity (NTU)	ORP (mv)	DO (mg/L)	
1425	Began well purge @ 0.32 GPM								
1436	3.96	.32	1.17	7.90	20.2	25	258	5.36	125.95
1435	4.72	.30	1.18	7.84	20.7	12	252	4.35	125.82
1440	5.49	.28	1.17	7.82	21.7	11	242	4.55	125.95
1445	7.01	.26	1.18	7.82	22.5	18	240	7.59	125.95
1450	8.54	.26	1.18	7.79	23.2	13	241	4.47	125.95
1455	9.63	.21	1.18	7.79	23.6	8	246	4.40	125.95
1500	Collect Sample								

FIELD SCREENING ANALYSIS

Parameter	Method/Instrument	Measurement 1	Measurement 2	Average Measurement	Date/Time	Sampler
H ₂ S						
Fe ²⁺						

OBSERVATIONS OF GROUNDWATER SAMPLES

Color: Clear Other (describe):

Odor: None Low Medium High Fuel-like Other (describe):

Comments:



MWH

FIELD REPORT

0815 Arrived
at W2-06
0845 Started well
Purge at 1.4 GPM
Well gauge 756A
on Unit well
pumps dry

0935 Pumped 75 gal
reset pump to 121'
and restarted
purge at normal
purge rate

1015 Collected sample - Start decan
1115 Decan Complete - Depart W2-06
1730 Arrived at Area 49 - Started decan
1735 Decan Complete lowered pump to 142.30
1845 Started well purge
1815 Collect Sample - Start decan

Date:	4/12/06	Job No.:	1951048
Project:	LT GWM		
Location:	BATE		
Weather:	Clear Cool		
Present at Site:	MUNSON - ELLIS		
Calibration Fluid Manufacturer and Lot#: 4974			
AutoCal Exp. 07-05-07			
	Actual	Beginning	Ending
	Value	Calibration	Calibration
Calibration Time:	-	6140	1530
pH (SU)	4.0	3.95	3.79
EC (ms/cm)	46.49	41.57	44.8
Turbidity (NTU)	0	0	0
Dissolved Oxygen (mg/L)	✓	1139	8.80

PAGE 1 OF 1

PREPARED BY: *EMUNSON*

1340 Treat Blvd. Sta. 300
Walnut Creek, CA 94597

Phone: 925-975-3400
Fax: 925-975-3412



MONITORING WELL SAMPLING LOG

All measurements taken from: Top of Casing Protective Casing Ground Level Sample ID WZ-06-WG

Well Number WZ-06 Static Water Level (ft) 113.35

Date 4/12/06 Depth to Product (ft) N/A

Time Start: 0845 End: 1015 Total Well Depth (ft) 133.0

Client AFCEE Standing Water Column (ft) 20.0

Project George AFB Basewide Groundwater Monitoring Purging Method Modified Micropurge

Sampler(s) MUNSON-ELLIS Purging Equipment 2 Grundfos Pedilon

Well Diameter 4" Borehole Diameter 8" Water Level Equipment SBLINSE

Screen Interval 113.0' - 133.0' Field Parameter Meter HORIBA U-10

Pump Depth (ft) 132.0' / 123 ORP Meter HANNA

FIELD PARAMETERS MEASURED									
TIME	AMOUNT PURGED (gallons)	Purge Rate (gpm)	5% EC (mS/cm)	1% pH	5% Temp (°C)	10% or <10 Turbidity (NTU)	5% ORP (mv)	10% DO (mg/L)	Water Level (ft)
0845	Started Well purge @ 1.46 gpm								
0855	20.0	1.47	.592	7.06	23.1	32	228	2.48	115.81
0910	32.5	1.45	.583	7.83	23.7	20	221	2.36	115.65
0920	57.70	1.46	.584	7.95	23.9	17	227	2.16	116.02
0935	74.66	1.46	.585	7.98	24.0	20	228	2.14	116.14
0950	Restarted well purge @ 2.2 gpm								
0955	1.50	.23	.584	8.03	22.8	12	142	2.18	114.02
1000	2.85	.21	.586	8.00	22.6	14	180	2.29	113.92
1005	3.87	.22	.582	7.99	23.4	14	192	2.19	113.92
1010	4.35	.22	.584	7.98	23.6	14	192	2.16	113.92
1015	Collect Samples								

FIELD SCREENING ANALYSIS						
Parameter	Method/Instrument	Measurement 1	Measurement 2	Average Measurement	Date/Time	Sampler
H ₂ S						
Pb ²⁺						

OBSERVATIONS OF GROUNDWATER SAMPLES

Color: Clear Other (describe):

Odor: None Low Medium High Fuel-like Other (describe):

Comments: Pump placed one foot from bottom of well



MONITORING WELL SAMPLING LOG

All measurements taken from: Top of Casing Pervious Casing Ground Level Sample ID _____

Well Number MW-49 Static Water Level (ft) 137.36

Date 4/12/06 Depth to Product (ft) N/A

Time Start: 1445 End: 1515 Total Well Depth (ft) 160.0'

Client: AFCOE Standing Water Column (ft) 22.7'

Project: George AFB Basewide Groundwater Monitoring Purging Method: Modified Microbore

Sampler(s): MUNSON-ELLS Purging Equipment: Grounds Bedflow

Well Diameter: 4" Borehole Diameter: 12" Water Level Equipment: SOLLNER

Screen Interval: 120-160 Field Parameter Meter: HORIBA 61-10

Pump Depth (ft): 142.30' ORP Meter: HANNA

FIELD PARAMETERS MEASURED

TIME	AMOUNT PURGED (gallons)	FIELD PARAMETERS MEASURED							Water Level (ft)
		Purge Rate (gpm)	5% EP (mg/cm)	1% pH	5% Temp (°C)	10% or <10 Turbidity (NTU)	5% ORP (mv)	10% DO (mg/L)	
1445	Started well purge @					35	6pm		
1450	4.25	3.4	760	8.30	24.2	24	227	7.26	138.90
1455	5.51	2.8	752	8.35	24.7	13	155	6.60	138.99
1500	6.96	2.6	832	8.42	24.9	9	187	6.33	138.92
1505	8.09	2.6	837	8.42	24.9	9	170	6.28	138.93
1510	9.32	2.6	834	8.43	25.1	8	191	6.31	138.95
1515	Collect sample								

FIELD SCREENING ANALYSIS

Parameter	Method/Instrument	Measurement 1	Measurement 2	Average Measurement	Date/Time	Sampler
Mg						
Fat						

OBSERVATIONS OF GROUNDWATER SAMPLES

Color: Clear Other (describe): _____

Odor: None Low Medium High Fuel-like Other (describe): _____

Comments: _____

05-03 GAFB



GEORGE AIR FORCE BASE
SAN BERNARDINO COUNTY, CALIFORNIA
MONITORING WELL SAMPLING LOG

FIGURE
B-1

Chain-of Custody Records

EPA USEPA Contract Laboratory Program
Generic Chain of Custody

Reference Case: 35220

Client No:

R

Region: 9 Project Code: Account Code: CERCLUS ID: CA2570024453 Spill ID: Q7 Site Name/State: George Air Force Base/CA Project Leader: Greg Nagle Action: Combined RI/FS Sampling Co: EPA Region 9 Laboratory	Date Shipped: 4/12/2006 Carrier Name: FedEx Airbill: 845198569820 Shipped to: EPA Region 9 Laboratory 1337 South 46th Street, Building 201 Richmond CA 94804 (510) 412-2377	Chain of Custody Record Relinquished By: (Date / Time) Received By: (Date / Time)	Sample Signature: 1 2 3 4
--	--	--	---------------------------------------

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		QC Type
Y2FX6	Ground Water/ Greg Nagle	L/G	ALK & NO3 (21)	151 (Ice Only) (1)	MW-200	S: 4/12/2006	14:00	FE
Y2FX7	Ground Water/ Greg Nagle	L/G	ALK & NO3 (21), TOC (21)	130 (HCL), 131 (HCL), 136 (Ice Only), 137 (Ice Only), 138 (Ice Only) (5)	WZ-06	S: 4/12/2006	10:15	

Shipment for Case Complete Y/N	Sample(s) to be used for laboratory QC: Y2FX7	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: ALK & NO3 = Alkalinity & Nitrate, TOC = Total Organic Carbon	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Loaded? _____

TR Number: 9-265062414-041206-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3919; Phone 703/818-4200; Fax 703/818-4402

REGION COPY

EPA USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No: 35220
 DAS No:

R

Region: 9	Date Shipped: 4/10/2006	Chain of Custody Record	Sample Signature
Project Code:	Carrier Name: FedEx	Relinquished By	(Date / Time)
Account Code:	Airbill: 8451-9856-9771	Received By	(Date / Time)
CERCLIS ID: CA2570024453	Shipped to: A4 Scientific	1	
Spill ID: Q7	1644 Sawdust Road	2	
Site Name/State: George Air Force Base/CA	Suite 506	3	
Project Leader: Greg Nagle	The Woodlands TX 77380	4	
Action: Combined RI/FS	(281) 292-5277		
Sampling Co: EPA Region 9 Laboratory			

ORGANIC SAMPLE No.	MTRD/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNOVER	TAG No./ PRESERVATIVE Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	QC Type
Y2FX1	Ground Water/ Greg Nagle	L/G	VOA (21)	112 (HCL), 113 (HCL), 114 (HCL), 115 (HCL), 116 (HCL), 117 (HCL), 118 (HCL), 119 (HCL), 120 (HCL) (9)	NZ-107	S: 4/10/2006 11:15		

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: Y2FX1	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: VOA = CLP TCL Volatiles	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

TR Number: 9-265062414-041006-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax: 703/818-4200

REGION COPY

EPA USEPA Contract Laboratory Program
Generic Chain of Custody

Reference Case: 35220

R

Client No:

Region: 9	Date Shipped: 4/10/2006	Chain of Custody Record	Sampler Signature:
Project Code:	Carrier Name: FedEx		
Account Code:	Airbill: 8451-8855-9782	Relinquished By (Date / Time):	Received By (Date / Time):
CERCLIS ID: CA2570024453	Shipped to: EPA Region 9 Laboratory 1337 South 46th Street, Building 201 Richmond CA 94804 (510) 412-2377	1:	
Spill ID: Q7		2:	
Site Name/State: George Air Force Base/CA		3:	
Project Leader: Greg Nagle		4:	
Action: Combined RI/FS			
Sampling Co: EPA Region 9 Laboratory			

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS TURNAROUND	TAG No./PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	QC Type
Y2FX1	Ground Water/ Greg Nagle	L/G	Anions & T. (21)	121 (Ice Only), 122 (Ice Only), 123 (Ice Only) (3)	NZ-107	S: 4/10/2006 11:15	

Shipment for Case Complete? <input type="checkbox"/>	Sample(s) to be used for laboratory QC: Y2FX1	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: Anions & T = Anions & TDS	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? <input type="checkbox"/>

IR Number: 9-265062414-041006-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4200

REGION COPY

FZV5.1.047 Page 1 of 1

Field Audit4_10_06Final

EPA USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No: 35220

R

DAS No:

Region: 9	Date Shipped: 4/11/2006	Chain of Custody Record		Sampler Signature:	
Project Code:	Carrier Name: FedEx	Relinquished By	(Date / Time)	Received By	(Date / Time)
Account Code:	Airbill: 8415 9856 9830	1			
CERCLUS ID: CA2570024453	Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277	2			
Spill ID: Q7		3			
Site Name/State: George Air Force Base/CA		4			
Project Leader: Greg Nagle					
Action: Combined RI/FS					
Sampling Co: EPA Region 9 Laboratory					

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNOVER	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	QC Type
Y2FW8	Ground Water/ Greg Nagle	L/G	VOA (21)	103 (HCL), 104 (HCL), 105 (HCL) (3)	FT-03	S: 4/11/2006 8:50		
Y2FW9	Ground Water/ Greg Nagle	L/G	VOA (21)	106 (HCL), 107 (HCL), 108 (HCL) (3)	MW-69	S: 4/12/2006 15:00		
Y2FX2	Ground Water/ Greg Nagle	L/G	PEST (21)	124 (Ice Only), 125 (Ice Only), 126 (Ice Only), 127 (Ice Only), 128 (Ice Only), 129 (Ice Only) (6)	NZ-69	S: 4/11/2006 11:10		
Y2FX4	Field QC/ Greg Nagle	L/G	VOA (21)	145 (HCL), 146 (HCL), 147 (HCL) (3)	04112006TB	S: 4/11/2006 15:15		Trip Blank

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: Y2FX2	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: PEST = GLP, TCL Pesticide/PCBS, VOA = GLP, TCL Volatiles	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Used?

TR Number: 9-265062414-041006-0003

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/816-4200; Fax 703/816-4200

REGION COPY



**USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record**

Case No: 35220
DAS No:

R

Region: 9	Date Shipped: 4/10/2006	Chain of Custody Record		Sampler Signature:	
Project Code:	Carrier Name: FedEx	Relinquished By:	(Date / Time)	Received By:	(Date / Time)
Account Code:	Airbill: 8451 9858 9771	1			
CERCLIS ID: CA2570024453	Shipped to: AA Scientific	2			
Spill ID: Q7	1544 Sawdust Road	3			
Site Name/State: George Air Force Base/CA	Suite 505	4			
Project Leader: Greg Nagle	The Woodlands TX 77380				
Action: Combined RI/FS	(281) 292-6277				
Sampling Co: EPA Region 9 Laboratory					

ORGANIC SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No/PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	QC Type
Y2FX3	Field QC/ Greg Nagle	L/G	VOA (21)	142 (HCL), 143 (HCL), 144 (HCL) (3)	04102006TB	S: 4/10/2006 13:30		Trip Blank

Shipment for Case Complete? <input type="checkbox"/> N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: VOA = CLP TCL Volatiles	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? <input type="checkbox"/>

TR Number: 9-265062414-041106-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4202

REGION COPY

Field Audit4_10_06Final

EPA USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No: 35220

R

DAS No:

Region: 9	Date Shipped: 4/12/2006	Chain of Custody Record		Sampler Signature:	
Project Code:	Carrier Name: FedEx	Relinquished By	(Date / Time)	Received By	(Date / Time)
Account Code:	Airbill: 8451 9856 9808	1			
CERCLIS ID: CA2570024453	Shipped to: A4 Scientific 1544 Sawdust Road Suite 505 The Woodlands TX 77380 (281) 292-5277	2			
Spill ID: Q7		3			
Site Name/State: George Air Force Base/CA		4			
Project Leader: Greg Nagle					
Action: Combined RI/FS					
Sampling Co: EPA Region 9 Laboratory					

ORGANIC SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No./PRESERVATIVE/BOTTLES	STATION/LOCATION	SAMPLE COLLECT DATE/TIME	INORGANIC SAMPLE No.	QC Type
Y2FW7	Ground Water/ Greg Nagle	M/G	VOA (21)	100 (HCL), 101 (HCL), 102 (HCL) (3)	NZ-27	S: 4/12/2006 12:25		
Y2FX0	Ground Water/ Greg Nagle	M/G	VOA (21)	109 (HCL), 110 (HCL), 111 (HCL) (3)	MW-49	S: 4/12/2006 15:15		
Y2FX5	Field QC/ Greg Nagle	L/G	VOA (21)	148 (HCL), 149 (HCL), 150 (HCL) (3)	04122006TB	S: 4/12/2006 15:00		Trip Blank
Y2FX6	Ground Water/ Greg Nagle	L/G	VOA (21)	155 (HCL), 156 (HCL), 157 (HCL) (3)	MW-200	S: 4/12/2006 14:00		PE
Y2FX7	Ground Water/ Greg Nagle	L/G	VOA (21)	139 (HCL), 140 (HCL), 141 (HCL) (3)	WZ-06	S: 4/12/2006 10:15		

Shipment for Case Complete? <input type="checkbox"/>	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key: VOA = CLP TCL Volatiles	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composites = C, Grab = G	Shipment Iced? <input type="checkbox"/>

TR Number: 9-265062414-041106-0003

FR provides preliminary results. Requests for preliminary results will increase analytical costs.
 Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/816-4200; Fax 703/816-4200

REGION COPY

F2V5.1.047 Page 1 of 1

Field Audit4_10_06Final